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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHARLES L. TAZZIA

Appeal 2009-1674
Application 10/723,900
Technology Center 1700

Decided:¹ April 16, 2009

Before CHUNG K. PAK, BEVERLY A. FRANKLIN, and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

FRANKLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

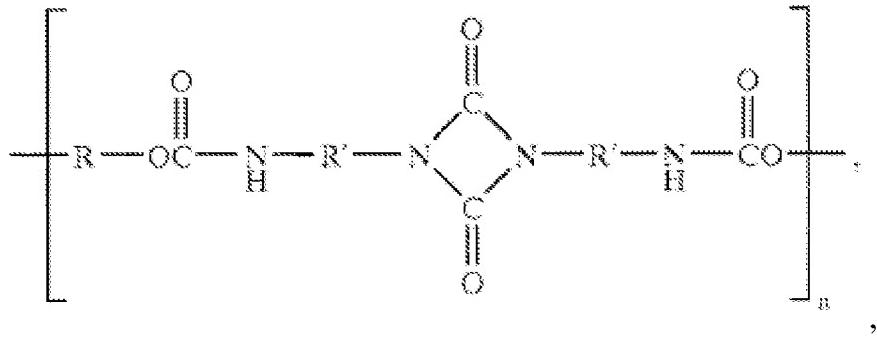
Appellant seeks our review under 35 U.S.C. § 134 of the final

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the Decided Date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

rejection of claims 1, 3, 4, 7-9, and 11-13. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

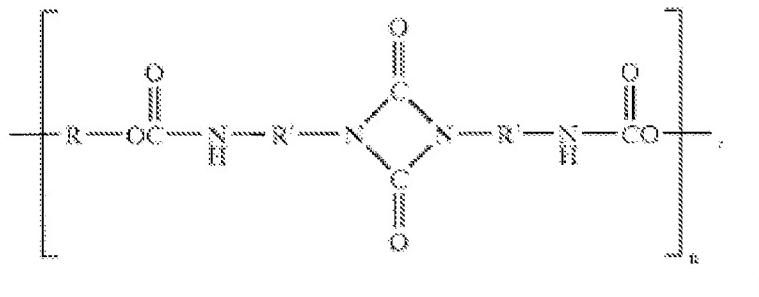
Claims 1 and 7 are representative of the subject matter on appeal, and are set forth below:

1. An aqueous, electrodepositable coating composition comprising a dispersion of a cathodically electrodedepositable, active hydrogen-functional epoxy resin and a uretdione compound, the epoxy resin having a cationic functional group selected from the group consisting of quaternary ammonium, sulfonium and phosphonium, wherein the uretdione compound comprises a structure of:



wherein R is a divalent alkylene radical, R' is a divalent alkylene, cycloalkylene, arylene, or alkylarylene radical, and n is an integer of 1 to about 50.

7. A method of making an aqueous dispersion coating, comprising steps of combining a solid uretdione compound with a molten, water-dispersible epoxy resin, the epoxy resin having a cationic functional group selected from the group consisting of quaternary ammonium, sulfonium and phosphonium, to form a homogenous resin mixture, wherein the uretdione compound comprises a structure of:



wherein R is a divalent alkylene radical, R' is a divalent alkylene, cycloalkylene, arylene, or alkylarylene radical, and n is an integer of 1 to about 50;

salting the water-dispersible resin; and
dispersing the resin mixture in water.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

O'Connor	4,496,684	Jan. 29, 1985
Gras	6,479,613 B2	Nov. 12, 2002
Hartung	2003/0150730 A1	Aug. 14, 2003

SUMMARY OF THE DECISION

We affirm.

THE REJECTIONS

Claims 1, 3, 4, 7-9, and 11-13 stand rejected under 35 U.S.C. § 103(a) over Hartung in view of O'Connor or Gras.

ISSUE

Whether one skilled in the art, in view of the teachings of Hartung, in view of O'Connor or Gras, would have been motivated to have selected the uretdione containing polyaddition compounds of O'Connor or Gras as the crosslinking agent in Hartung?

FINDINGS OF FACT

The Examiner finds that Hartung discloses an aqueous electrodedepositable coating composition, wherein an externally crosslinking binder, such as a cationic group containing active hydrogen functional epoxy resin, and crosslinking agent are homogeneously mixed as melts and subsequently emulsified into an aqueous medium to yield the coating composition. The Examiner finds that Hartung discloses that the crosslinking agent may be selected from uretdione containing polyisocyanates, wherein dimerized (uretdione group containing) isophorone diisocyanate is disclosed as being one of the preferred crosslinking agents. See paras. [0007]-[0017], [0026], [0034], and [0044] of Hartung. The Examiner finds that Hartung discloses, in paragraphs [0020]-[0026], that the cathodically depositable electrodeposition coatings employ quaternary ammonium, sulfonium, and quaternary phosphonium groups. Ans. 3.

The Examiner finds that uretdione containing crosslinking agents having Appellant's claimed structure (wherein the uretdione diisocyanate is modified with a polyol compound to introduce urethane groups into the uretdione structure) are taught by O'Connor and Gras. Ans. 4. Appellant does not argue that the compounds taught by O'Connor or Gras are not the

same as the uretdione compound as claimed by Appellant. The Examiner finds that O'Connor discloses that uretdione containing polyurethane oligomers are useful for the production of aqueous polyurethane dispersion coatings. See O'Connor, abstract, cols. 2 and 4; Ans. 4.

The Examiner also finds that Gras discloses that polyaddition products containing uretdione groups are useful for the production of powder coatings and stoving enamels. See Abstract of Gras and page 4 of Answer. The Examiner finds that Gras teaches that the uretdione polyaddition products may be reacted with active hydrogen functional epoxy resins. See col. 4, ll. 26 and 27; Ans. 4. Appellant does not dispute the Examiner's findings that both Hartung and Gras teach that the disclosed components are reactive with active hydrogen containing compounds.

PRINCIPLES OF LAW

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1740-41 (2007). “To facilitate review, this analysis should be made explicit.” *Id.* “[T]he analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.*

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *Keller*, 642 F.2d at 425-426; *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097-1098 (Fed. Cir. 1986).

Obviousness does not require absolute predictability, but a reasonable expectation of success. *In re Clinton*, 527 F.2d 1226, 1228-1229 (CCPA 1976).

ANALYSIS

As an initial matter, Appellant has not separately argued the dependent claims with any reasonable specificity. Accordingly, dependent claims 3, 4, and 11-13 stand or fall with independent claim 1, and dependent claims 8 and 9 stand or fall with independent claim 7. Appellant also presents the same arguments for claims 1 and 7. Hence, although our analysis applies to independent claims 1 and 7, it addresses all of the appealed claims.

Appellant's basic position is that motivation is lacking to combine Hartung in view of O'Connor or Gras. Br. 4-9; Reply Br. 2-7.

Appellant argues that one skilled in the art would not have been led to use either the O'Connor polyurethane oligomer or the Gras polyaddition product in the Hartung coating composition. Appellant asserts that in view

of the different goals and priorities of Hartung and O'Connor or Gras, one skilled in the art would not have been led to recreate the present invention from these references. Br. 5. *See also* Reply Brief 3-5². Appellant asserts that the combination of references is achieved solely based on Applicant's disclosure and the impermissible use of hindsight. Br. 5-7. Appellant argues that the combination of Hartung and Gras lacks motivation because there is no reasonable expectation of success. Br. 8-9.

On page 5 of the Reply Brief, Appellant states:

The option of uretdione group containing diisocyanate crosslinking agents in the production of aqueous, electrodepositable coating compositions, (Examiner's Answer page 5, lines 11-12) as per Hartung, provides no

² On pages 3-4 of the Reply Brief, Appellant argues that the context in which the compound is used in O'Connor is unrelated to forming an electrodeposition coating material according to Hartung. Appellant argues that O'Connor forms a pre-polymer by reacting an uretdione with a polyol and further reacts the pre-polymer with an anhydride to form a polyurethane oligomer. Appellant argues that it is then preferable to neutralize substantially all of the carboxylic acid groups in the polyurethane oligomer using a neutralizing agent. Appellant argues that the pre-polymer is simply an intermediate in a multistep process to form the neutralized polyurethane oligomer. Appellant argues that the polyurethane oligomer is used in an aqueous dispersion to manufacture lignocellulosic composite materials (e.g., particle board). On page 4 of the Reply Brief, Appellant asserts that the O'Connor teachings provide no connection to the electrodeposition coating material of Hartung. Appellant argues that the polyurethane oligomer is not being used to crosslink a separate active-hydrogen functional resin. On pages 4-5 of the Reply Brief, Appellant argues that Gras provides no disclosure regarding aqueous coatings or application via electrodeposition. On page 5 of the Reply Brief, Appellant concludes that no nexus exists between Hartung and O'Connor or Gras.

basis for a skilled artisan to make the leap to the polyaddition products of O'Connor or Gras, which contain uretdione groups linked by polyol residues. If the skilled artisan wanted to increase the isocyanate group content, the optional dimers or trimers of diisocyanates according to Hartung would serve that purpose. There is nothing to connect Hartung's crosslinkers with uretdiones linked with polyols.

The Examiner's position is that Hartung discloses an aqueous electrodeposable coating composition, wherein an externally crosslinking binder, such as a cationic group containing active hydrogen functional epoxy resin, and crosslinking agent, are homogeneously mixed as melts, and subsequently emulsified into an aqueous medium to yield the coating composition. Ans. 3.

The Examiner finds that Hartung discloses that the crosslinking agent may be selected from uretdione containing polyisocyanates, wherein dimerized (uretdione group containing) isophorone diisocyanate is disclosed as being one of the preferred crosslinking agents. The Examiner finds that Hartung discloses that the cathodically depositable electrodeposition coatings employ quaternary ammonium, sulfonium, and quaternary phosphonium groups. *See Findings of Fact section, supra.*

The Examiner recognizes that although Hartung discloses that a preferred crosslinking agent for the coatings is a dimerized or uretdione containing isocyanate, Hartung fails to disclose the uretdione crosslinking agent that corresponds to Appellant's particularly claimed uretdione compound. Ans. 3.

However, the Examiner finds that uretdione containing crosslinking agents having Appellant's claimed structure (wherein the uretdione diisocyanate is modified with a polyol compound to introduce urethane

groups into the uretdione structure), were known at the time of Appellant's invention, as supported by the teachings of O'Connor and Gras. Ans. 4.

The Examiner finds that O'Connor discloses that uretdione containing polyurethane oligomers are useful for the production of aqueous polyurethane dispersion coatings. *See Findings of Fact section, supra.*

The Examiner also finds that Gras discloses that polyaddition products containing uretdione groups are useful for the production of powder coatings and stoving enamels. The Examiner finds that Gras further teaches that the uretdione polyaddition products may be reacted with active hydrogen functional epoxy resins. *See Findings of Fact section, supra.*

The Examiner concludes that in view of the teachings of the use of uretdione containing crosslinking agents in Hartung (as discussed *supra*), and in view of the disclosed utilities for the polyaddition compounds taught by O'Connor (for making aqueous compositions) or Gras (for making coatings and the function of being reactive with active hydrogen functional epoxy resins), that one of ordinary skill in the art would have been motivated to employ the uretdione containing polyaddition compounds of O'Connor or Gras as the crosslinking agent in Hartung. Ans. 4.

In view of the Examiner's position as outlined above, the Examiner's analysis is sufficient to establish a *prima facie* case of obviousness. *KSR*, 127 S.Ct. at 1740-41.

The test for obviousness is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *Keller*, 642 F.2d at 425. The Examiner's position is that in view of the combined teachings of Hartung in view of O'Connor or Gras, one skilled in the art would have been motivated to employ the uretidione containing polyaddition

compounds of O'Connor and Gras as the crosslinking agent of Hartung, as there would have been a reasonable expectation of success in so doing.

Clinton, 527 F.2d at 1228-1229. This reasonable expectation of success is explained by the Examiner in the Answer, discussed below.

Contrary to Appellant's assertion made on page 6 of the Brief that Hartung does not provide a preference or reason for using any particular crosslinker, the Examiner states "it cannot be argued that Hartung et al. fail[s] to teach a preference for the use of dimerized diisocyanates" because Hartung teaches that the use of blocked polyisocyanates are particularly preferred within paragraph [0070], and that Hartung teaches that dimerized (uretdione group containing) diisocyanates are especially preferred within paragraph [0044]. This supports the Examiner's position that one skilled in the art would have been motivated to have selected, from the disclosed lists of crosslinking agents of Hartung, dimerized diisocyanates, as a preferred group of crosslinking agents. Ans. 4-5.

We also agree with the Examiner's response to Appellant's arguments regarding O'Connor, in that Appellant has failed to appreciate the combined teachings of the applied art. Ans. 5. In other words, Appellant attacks the references individually, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *Keller*, 642 F.2d at 425-426; *Merck*, 800 F.2d 1097-1098. See also *KSR*, 127 S.Ct. at 1740-41. Appellant argues that O'Connor does not provide any motivation to include the polyurethane oligomer in an aqueous, electrodepositable coating composition. However, as the Examiner correctly points out, Hartung teaches a preference for the uretdione group containing diisocyanate derived crosslinking agents in the production of aqueous,

electrodepositable coating compositions. Ans. 4-5. The Examiner finds that Hartung teaches that the disclosed crosslinking agents and an externally crosslinking binder, such as a cationic group containing active hydrogen functional epoxy resin, are homogeneously mixed as melts, and subsequently emulsified into an aqueous medium to yield an aqueous electrodepositable coating composition. *See Findings of Facts, supra.* The Examiner finds that O'Connor discloses the use of uretdione group containing polyurethane oligomers in the production of aqueous coatings. *See Findings of Facts, supra.*

The Examiner's statement that these respective teachings to use uretdione group containing compounds as components of aqueous coatings, wherein the components are reactive with active hydrogen containing compounds, supports the Examiner's position that there is sufficient motivation (i.e., reasonable expectation of success) to combine the teachings of these references. Ans. 5. Appellant does not show that there is a lack of a reasonable expectation of success regarding employment of the component of O'Connor as the crosslinking agent of Hartung in view of the fact that both Hartung and O'Connor teach to use uretdione group containing compounds as components of aqueous coatings. *Clinton*, 527 F.2d at 1228-29. Hence, Appellant's assertion made on page 5 of the Reply Brief that it is a "leap to the polyaddition products of O'Connor" is unsupported.

We also agree with the Examiner's response to Appellant's assertion that nothing in Gras teaches the use or suitability of its polyaddition product in an aqueous coating composition. In response, the Examiner states that both Gras and Hartung disclose coating compositions derived from uretdione or dimerized isocyanates. The Examiner's position is that these teachings,

coupled with the teachings to make aqueous coatings in Hartung, provide sufficient motivation to combine these references. The Examiner's position is that *both references teach that uretdione or dimerized isocyanates function as crosslinking agents for active hydrogen compounds* [emphasis added], and therefore there is a reasonable expectation of success that the compound in Gras can be used as the crosslinking agent in Hartung. Ans. 5-6. As indicated in footnote 2, *supra*, while Appellant argues that there is no disclosure in Gras regarding aqueous coatings or application via electrodeposition, Appellant does not specifically dispute the similarity of function in specific regard to the Examiner's finding that the components (as taught by both Hartung and Gras) are reactive with active hydrogen containing compounds. Absent evidence to the contrary, we are not convinced by Appellant's arguments that there is no reasonable expectation of success that the compound of Gras (taught to be reactive with active hydrogen compounds) would function similarly to the compound in Hartung (also taught to be reactive with active hydrogen compounds). *Clinton*, 527 F.2d at 1228-29.

We therefore affirm the rejection of claim 1 and its dependent claims 3, 4, and 11-13, as well as independent claim 7 and its dependent claims 8 and 9.

CONCLUSION OF LAW

One skilled in the art, in view of the teachings of Hartung, in view of O'Connor and Gras, would have been motivated to have selected the uretdione containing polyaddition compounds of O'Connor or Gras as the crosslinking agent in Hartung.

Appeal 2009-1674
Application 10/723,900

DECISION

The rejection of claims 1, 3, 4, 7-9, and 11-13 under 35 U.S.C.
§ 103(a) over Hartung in view of O'Connor or Gras is affirmed.

No time period for taking any subsequent action in connection with
this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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